

What is claimed is:

1. A coating composition, comprising
  - (a) in an organic continuous phase, a polymer having functional groups selected from the group consisting of hydroxyl groups, primary carbamate groups, and combinations thereof;
  - (b) a water-miscible organic solvent;
  - (c) an oxygenated solvent having a Hansen solubility parameter hydrogen bonding value of up to about 6.0; and
  - (d) water,wherein the water is emulsified.
2. A coating composition according to claim 1, wherein the polymer is selected from the group consisting of acrylic polymers, polyester polymers, polyurethane polymers, and combinations thereof.
3. A coating composition according to claim 1, wherein the polymer has hydroxyl groups.
4. A coating composition according to claim 3, wherein the coating composition further includes one or more carbamate-functional materials.
5. A coating composition according to claim 1, wherein the water is colloiddally emulsified in the coating composition.

6. A coating composition, comprising
- (a) an acrylic polymer having an equivalent weight of up to about 650 grams per equivalent of hydroxyl functionality, primary carbamate functionality, or a combination of hydroxyl and primary carbamate functionality;
  - (b) a water-miscible organic solvent;
  - (c) an oxygenated solvent having a Hansen solubility parameter hydrogen bonding value of up to about 6.0; and
  - (d) water,
- wherein the water is emulsified.

7. A coating composition according to claim 6, wherein the acrylic polymer has an hydroxyl equivalent weight of up to about 650 grams per equivalent.

8. A coating composition according to claim 6, wherein the coating composition is a clearcoat composition.

9. A coating composition according to claim 6, wherein the acrylic polymer has an equivalent weight of up to about 520 grams per equivalent.

10. A coating composition according to claim 6, wherein the acrylic polymer has an equivalent weight of at least about 260 grams per equivalent.

11. A coating composition according to claim 6, wherein the acrylic polymer has an equivalent weight in the range from 290 to 520 grams per equivalent.

12. A coating composition according to claim 6, wherein the acrylic polymer has a primary carbamate equivalent weight of up to about 650 grams per equivalent.

13. A coating composition, comprising  
an organic phase comprising

a polymer having a sufficient amount of functionality selected from the group consisting of hydroxyl functionality, primary carbamate functionality, and combinations thereof and

a sufficient amount of a water-miscible organic solvent to form a colloidal emulsion of water in the organic phase,

wherein the organic phase further includes a low hydrogen bonding oxygenated solvent.

14. A coating composition according to claim 13, wherein the polymer is an acrylic polymer.

15. A coating composition according to claim 14, wherein the acrylic polymer has a weight average molecular weight in the range from about 2400 to about 5000.

16. A coating composition according to claim 14, wherein the acrylic polymer has an equivalent weight in the range of 260 to 650 grams/equivalent.

17. A coating composition according to claim 13, wherein the water-miscible organic solvent is selected from the group consisting of acetone, diacetone alcohol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, ethylene glycol monobutyl ether, ethylene glycol monomethyl ether acetate, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monopropyl ether, diethylene glycol monobutyl ether, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, triethylene glycol monopropyl ether, triethylene glycol monobutyl ether, propylene glycol monomethyl ether, propylene glycol monoethyl ether, propylene glycol monopropyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether, tripropylene glycol monomethyl ether, tripropylene glycol monoethyl ether, butyl ethoxy propylene glycol, methanol, ethanol, n-propanol, isopropanol, 1-methyl-2-pyrrolidinone, and combinations thereof.

18. A coating composition according to claim 13, wherein the water-miscible organic solvent is at least about 10% by weight of the combined weights of water-miscible organic solvent, low hydrogen bonding oxygenated solvent, other organic solvent, and water in the coating composition.

19. A coating composition according to claim 13, wherein the low hydrogen bonding oxygenated solvent is selected from the group consisting of water-immiscible alcohol solvents, ester solvents, ketone solvents, and combinations thereof.

20. A coating composition according to claim 13, wherein the low hydrogen bonding oxygenated solvent is at least about 10% by weight of the combined weights of water-miscible organic solvent, low hydrogen bonding oxygenated solvent, other organic solvent, and water in the coating composition.

21. A coating composition according to claim 13, wherein the coating composition contains no more than about 25% by weight of organic solvent other than the water-miscible organic solvent and the low hydrogen bonding oxygenated solvent, based on the combined weights of water-miscible organic solvent, low hydrogen bonding oxygenated solvent, the other organic solvent, and water in the coating composition.

22. A coating composition according to claim 13, wherein the water is at least about 10% by weight of the combined weights of water-miscible organic solvent, low hydrogen bonding oxygenated solvent, other organic solvent, and water in the coating composition.

23. A coating composition according to claim 13, wherein weight ratio of water-miscible organic solvent, low hydrogen bonding oxygenated solvent, and water in the coating composition is from about 0.4 to about 3.0 parts by weight water-miscible organic solvent to from about 0.4 to about 3.0 parts by weight low hydrogen bonding oxygenated solvent for each part by weight of water.

24. A method of reducing the volatile organic content of a coating composition, comprising steps of:

preparing a coating composition containing a polymer having functionality selected from the group consisting of hydroxyl functionality, primary carbamate functionality, and combinations thereof, a water-miscible organic solvent, and a low hydrogen bonding oxygenated solvent;

adding water incrementally until the viscosity of the coating composition decreases and then increases to the desired viscosity, wherein the water is emulsified.

25. A method according to claim 24, wherein the water is added until the water is at least about 10% by weight of the volatile components of the coating composition.

26. A method according to claim 24, wherein polymer is an acrylic polymer and further wherein the coating composition includes a polar component selected

from the group consisting of polyisocyanates comprising a polar blocking group, carbamate-functional compounds having a molecular weight of up to about 2000, carbamate-functional oligomers having a number average molecular weight of up to about 2000, and combinations thereof.

27. A process for coating an automotive vehicle, comprising steps of:
- applying a primer coating composition and curing the applied primer coating composition to form a primer coating layer;
  - applying over the primer coating layer a basecoat coating composition;
  - applying over the applied basecoat coating composition a clearcoat coating composition; and
  - curing the applied basecoat coating composition and the applied clearcoat coating composition to form a basecoat-clearcoat composite coating layer,
- wherein at least one of the primer coating composition, the basecoat coating composition, and the clearcoat coating composition comprises
- (a) a polymer having functional groups selected from the group consisting of hydroxyl groups, primary carbamate groups, and combinations thereof;
  - (b) a water-miscible organic solvent;
  - (c) an oxygenated solvent having a Hansen solubility parameter hydrogen bonding value of up to about 6.0; and
  - (d) emulsified water.

28. A process according to claim 27, wherein the clearcoat coating composition comprises components (a), (b), (c), and (d).
29. A process according to claim 28, wherein the clearcoat coating composition has a volatile organic content of not more than about 3.1 lbs./gal.
30. A process according to claim 28, wherein the clearcoat coating composition has a volatile organic content of not more than about 2.8 lbs./gal.